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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 19353-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/21577	International filing date (day/month/year) 11 July 2003 (11.07.2003)	Priority date (day/month/year) 16 July 2002 (16.07.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): C02F 1/76 and US Cl.: 210/754		
Applicant ZENTOX CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

I Basis of the report
II Priority
III Non-establishment of report with regard to novelty, inventive step and industrial applicability
IV Lack of unity of invention
V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI Certain documents cited
VII Certain defects in the international application
VIII Certain observations on the international application

Date of submission of the demand 12 February 2004 (12.02.2004)	Date of completion of this report 16 August 2004 (16.08.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Peter A. Hruskoci Jean Proctor Paralegal Specialist Telephone No. 571-272-0987

I. Basis of the report**1. With regard to the elements of the international application:*** the international application as originally filed. the description:pages 1-41 as originally filedpages NONE, filed with the demandpages NONE, filed with the letter of _____. the claims:pages NONE, as originally filedpages NONE, as amended (together with any statement) under Article 19pages NONE, filed with the demandpages 42-48, filed with the letter of 15 June 2004 (15.06.2004). the drawings:pages 1-7, as originally filedpages NONE, filed with the demandpages NONE, filed with the letter of _____. the sequence listing part of the description:pages NONE, as originally filedpages NONE, filed with the demandpages NONE, filed with the letter of _____.**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language _____ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:** contained in the international application in printed form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.**4. The amendments have resulted in the cancellation of:** the description, pages None the claims, Nos. None the drawings, sheets/fig None**5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).****** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).**** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

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V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>1-46</u>	YES
	Claims <u>NONE</u>	NO

Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-46</u>	NO

Industrial Applicability (IA)	Claims <u>1-46</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Please See Continuation Sheet

INTERNATIONAL PRELIMINARY EXAMINATION REPORTInternational application No.
PCT/US03/21577**Supplemental Box**
(To be used when the space in any of the preceding boxes is not sufficient)**V. 2. Citations and Explanations:**

Claims 1, 7-9, 16, 17, 27-29, 31, 38, and 43 lack an inventive step under PCT Article 33(3) as being obvious over Caracciolo et al. in view of Rubow et al.. Caracciolo et al. disclose (see col. 7 line 37 through col. 12 line 40) a method for reducing the level of poultry contamination, and disinfecting an aqueous medium substantially as claimed. The claims differ from Caracciolo et al. by reciting that the water or aqueous medium is treated with chloramines. Rubow et al. disclose (see col. 2 line 64 through col. 3 line 15 and Example 3) that it is known in the art to utilize ozone and chloramines to aid in sterilizing or disinfecting food products including poultry. It would have been obvious to one skilled in the art to modify the method of Caracciolo by treating the water or aqueous medium with chloramines in view of the teachings of Rubow et al., to aid in disinfecting the water. With regard to claims 7-9, 16, and 17, it is submitted that the addition of ozone and chlorine as Caracciolo et al. would accomplish pathogen control, reduction in microorganisms, and preservation, as in the instant method.

Claims 2-6, 10-15, 18-26, 32-37, 39-42, and 44-46 lack an inventive step under PCT Article 33(3) as being obvious over Caracciolo et al. in view of Rubow et al. as above, and further in view of Arba et al. The claims differ from the references as applied above by reciting that the water or aqueous medium is treated with specific chloramines, and the pH of the water or aqueous medium is controlled. Arba et al. disclose (see col. 2 line 61 through col. 3 line 15) that it is known in the art of water treatment to utilize the recited chloramines at a specific pH range, to aid in disinfecting water. It would have been obvious to one skilled in the art to modify the references as applied above by treating the water or aqueous medium with the recited chloramines and controlling the pH in view of the teachings of Arba et al., to aid in disinfecting the water. The specific chloramines ratio and application means utilized would have been an obvious matter of process optimization to one skilled in the art, depending on the specific water or aqueous medium treated and results desired, absent a sufficient showing of unexpected results.

Claim 30 lacks an inventive step under PCT Article 33(3) as being obvious over Harvey et al. in view of Rubow et al.. Harvey et al. disclose (see col. 1 line 59 through col. 4 line 30) a method for food processing or preservation substantially as claimed. The claims differ from Harvey et al. by reciting that the water supply is injected with chloramines. Rubow et al. disclose (see col. 2 line 64 through col. 3 line 15 and Example 3) that it is known in the art to utilize chloramines to aid in sterilizing or disinfecting food products. It would have been obvious to one skilled in the art to modify the method of Harvey et al. by injecting the water supply with chloramines in view of the teachings of Rubow et al., to aid in disinfecting the water supply.

Claims 1-46 meet the criteria set out in PCT Article 33(2), because the prior art fails to disclose the method steps recited in the instant claims.

Claims 1-46 have industrial applicability and meet the criteria set out in PCT Article 33(4), because the methods can be used in industry to disinfect food process water and preserve foodstuffs.

Applicant argues that unlike Caracciolo, the instant application does not use controlled temperatures to minimize microbial growth by

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(To be used when the space in any of the preceding boxes is not sufficient)

the spraying gases and a mixture of ozone and water onto the food products during their processing. It is submitted that the temperatures, spraying step, and mixture utilized in Caracciolo are not excluded from the instant claims.

Applicant argues that Rubow teaches away from the use of chloramines in the processing of foodstuffs because chloramines have an extremely low redox potential and are not appropriate disinfecting agents. It is submitted that the teachings of Rubow appear to teach that ozone has a faster biocidal effect than the other disclosed agents including chloramines. Furthermore, col. 11 lines 18-23 and claim 12 of Rubow appear to show that it is appropriate to use chloramines to generate the redox potential and obtain a sterilizing or disinfecting liquid.

----- NEW CITATIONS -----

What is claimed is:

1. A method for reducing the level of poultry contamination resulting from the processing of poultry, wherein the processing includes the steps of scalding, picking, eviscerating, washing, rinsing and chilling said poultry, the method for reducing the level of 5 poultry contamination comprising the steps of:

adding chloramines as a disinfectant to process water used in at least one of said processing steps; and

using said disinfected process water at least one of said processing steps, thereby reducing the level of contamination of the poultry at each of said treated processing steps.

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2. The method according to claim 1 wherein said chloramines are comprised of monochloramine or any combination of monochloramine and dichloramine.

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3. The method according to claim 1 wherein said chloramines are comprised of a combination of monochloramine and dichloramine in a ratio of about 1:0 to about 1:1.

4. The method according to claim 3 wherein said chloramines are introduced into said aqueous medium where said aqueous medium has a desired pH range to control said ratio of monochloramine to dichloramine.

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5. The method according to claim 1 wherein said chloramines are present within said aqueous medium in nominally equimolar concentrations of monochloramine, dichloramine and free chlorine.

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6. The method according to claim 1 wherein said aqueous medium contains residual monochloramine.

7. The method according to claim 1 wherein disinfection of the aqueous medium is to accomplish pathogen control.

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8. The method according to claim 1 wherein disinfection of the aqueous medium is to accomplish preservation of the useful life of the poultry.

9. In a method for processing poultry comprising the steps of scalding, picking, eviscerating, washing, rinsing and chilling said poultry using a process for disinfecting a recyclable aqueous medium, said process for disinfecting comprising the steps of:

recovering at least a portion of the aqueous medium from a processing step;

5 filtering said recovered aqueous medium to remove particulate matter; disinfecting said aqueous medium with a highly reactive oxidant such as ozone; introducing chloramines to the finished water to provide antimicrobial residual; and reusing said recovered, filtered, disinfected and chloraminated aqueous medium in a poultry processing step.

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10. The method according to claim 9 further comprising a step of controlling the pH level of said disinfected process water.

11. The method according to claim 9 wherein said chloramines are comprised of
15 monochloramine or any combination of monochloramine and dichloramine.

12. The method according to claim 9 wherein said chloramines are comprised of a combination of monochloramine and dichloramine in a ratio of about 1:0 to about 1:1.

20 13. The method according to claim 12 wherein said chloramines are introduced into said aqueous medium where said aqueous medium has a desired pH range to control said ratio of monochloramine to dichloramine.

25 14. The method according to claim 9 wherein said chloramines are present within said aqueous medium in nominally equimolar concentrations of monochloramine, dichloramine and free chlorine.

15. The method according to claim 9 wherein said process water contains residual monochloramine.

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16. The method according to claim 9 wherein disinfected process water is used to accomplish pathogen control.

17. The method according to claim 9 wherein disinfected process water is used to accomplish preservation of the useful life of the poultry.

18. A method for reducing the level of poultry contamination resulting from the processing of poultry, wherein the processing of said poultry includes the steps of scalding, picker, post-pick, washer, rinsing and chilling, the method comprising the steps of:

recovering water used during at least one of said poultry processing steps;

treating said recovered water with chloramines and controlling the pH of said recovered water to reduce microorganisms therein; and

10 reintroducing said treated recovered water into at least one processing step which uses heated water, whereby the combination of said treated water and said heated water reduces the level of microorganisms within said poultry.

19. The method according to claim 18 wherein said chloramines are comprised 15 of monochloramine or any combination of monochloramine and dichloramine.

20. The method according to claim 18 wherein said chloramines are comprised of a combination of monochloramine and dichloramine in a ratio of about 1:0 to about 1:1.

21. The method according to claim 20 wherein said chloramines are introduced 20 into said aqueous medium where said aqueous medium has a desired pH range to control said ratio of monochloramine to dichloramine.

22. The method according to claim 18 wherein said chloramines are present 25 within said aqueous medium in nominally equimolar concentrations of monochloramine, dichloramine and free chlorine.

23. The method according to claim 18 wherein said treated recovered water contains residual monochloramine.

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24. The method according to claim 18 wherein a primary disinfection step of the recovered process water is accomplished by a highly reactive disinfectant such as ozone before the introduction of chloramines.

17. The method according to claim 9 wherein disinfected process water is used to accomplish preservation of the useful life of the poultry.

18. A method for reducing the level of poultry contamination resulting from the

5 processing of poultry, wherein the processing of said poultry includes the steps of scalding, picker, post-pick, washer, rinsing and chilling, the method comprising the steps of:

recovering water used during at least one of said poultry processing steps;

treating said recovered water with chloramines and controlling the pH of said recovered water to reduce microorganisms therein; and

10 reintroducing said treated recovered water into at least one processing step which uses heated water, whereby the combination of said treated water and said heated water reduces the level of microorganisms within said poultry.

19. The method according to claim 18 wherein said chloramines are comprised

15 of monochloramine or any combination of monochloramine and dichloramine.

20. The method according to claim 18 wherein said chloramines are comprised of a combination of monochloramine and dichloramine in a ratio of about 1:0 to about 1:1.

20 21. The method according to claim 20 wherein said chloramines are introduced into said aqueous medium where said aqueous medium has a desired pH range to control said ratio of monochloramine to dichloramine.

22. The method according to claim 18 wherein said chloramines are present 25 within said aqueous medium in nominally equimolar concentrations of monochloramine, dichloramine and free chlorine.

23. The method according to claim 18 wherein said treated recovered water contains residual monochloramine.

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24. The method according to claim 18 wherein a primary disinfection step of the recovered process water is accomplished by a highly reactive disinfectant such as ozone before the introduction of chloramines.

25. The method according to claim 18 wherein chloramines are introduced for pathogen control.

5 26. The method according to claim 18 wherein chloramines are introduced for food preservation.

10 27. A system for reducing the level of poultry contamination resulting from poultry processing including the steps of scalding, picker, post-pick, washer, rinsing and chilling, the system including a water reuse and disinfection method, the water reuse method comprising the steps of:

recovering water used during at least one of said poultry processing steps;

treating said recovered water with chloramines to reduce the level of microorganisms therein; and

15 reintroducing said treated water into at least one of said poultry processing steps which uses heated water;

the disinfection method comprising the steps of:

adding a chloramines to water used in said poultry processing steps; and

20 using said disinfected water in at least one of said poultry processing steps which uses heated water, whereby the combination of said reuse water, said heated water and said disinfected water in said poultry processing steps reduces the level of microorganisms within said poultry.

28. In a method for food processing comprising the use of an aqueous medium 25 said food processing using a process for disinfecting said aqueous medium and food stuffs, said process for disinfecting comprising the steps of:

recovering at least a portion of the aqueous medium from a processing step;

filtering said recovered aqueous medium to remove particulate matter;

30 treating said aqueous medium by introduction of chloramines within said aqueous medium; and

reusing said filtered recovered aqueous medium in a processing step.

29. The method according to claim 28 wherein a primary disinfection step of the recovered process water is accomplished by a highly reactive disinfectant such as ozone before the introduction of chloramines.

5 30. A method for food processing or preservation comprising the steps of:
injecting selected levels of chloramines within a water supply;
freezing said chloraminated water thereby forming ice containing said
selected levels of chloramines; and
using said chloraminated ice to preserve food products or for pathogen
10 control.

31. A method for pathogen reduction in food stuffs within food product processing comprising the steps of:
providing an aqueous medium that comes in contact with food stuffs within said
15 food product processing
treating said aqueous medium by the introduction of chloramines said chloramines
reducing pathogens within foodstuffs within said food product processing.

32. The method according to claim 31 wherein said chloramines are selected for
20 the group consisting of monochloramine and dichloramine.

33. The method according to claim 32 wherein said monochloramine and
dichloramine are used in combination with each other.

25 34. The method according to claim 33 wherein said combination of
monochloramine and dichloramine is in a ratio of about 1:0 to about 1:1.

35. The method according to claim 34 wherein said aqueous medium has
selected pH range to control said ratio of monochloramine to dichloramine.

30 36. The method according to claim 31 wherein said chloramines are present
within said aqueous medium in nominally equimolar concentrations of monochloramine,
dichloramine and free chlorine.

37. The method according to claim 31 wherein said aqueous medium contains residual monochloramine.

5 38. The method according to claim 31 wherein disinfection of the aqueous medium and food stuffs increases preservation of food products.

10 39. A method of using monochloramine and dichloramine and combinations thereof as an antimicrobial agent in organically laden waters found in food washing and processing applications.

40. The method according to claim 39 wherein said organically laden waters are in a chiller tank in a poultry processing plant.

15 41. The method according to claim 39 wherein said organically laden waters are in a scalding tank in a poultry processing plant.

42. The method according to claim 39 wherein said organically laden waters are used to disinfect cooked packed products.

20 43. A method for reducing the level of poultry contamination resulting from the scalding processing step or any other processing step which uses heated water, the method comprising the treatment of the heated water in the scalding or other heated processing step or make-up water that will enter the heated processing water with chloramines to reduce the 25 level of microorganisms therein.

44. A method of application for using monochloramine and dichloramine and combinations thereof as an antimicrobial agent for pathogen control or to increase preservation of food stuffs by means of an electrostatically accelerated spray.

30 45. A method of application for using monochloramine and dichloramine and combinations thereof as an antimicrobial agent for pathogen control or to increase preservation of foodstuffs by means of a fogging mist.

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46. A method of application for using monochloramine and dichloramine and combinations thereof as an antimicrobial agent for pathogen control or to increase preservation of foodstuffs by means of a high retention foam.

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